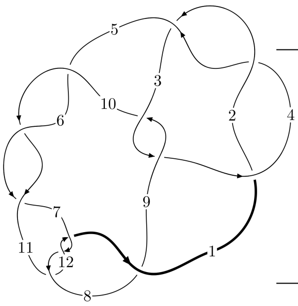
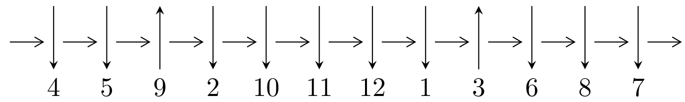
$12a_{0839}$ $(K12a_{0839})$



A knot diagram[1]

Linearized knot diagam



Solving Sequence

$$8{,}11 \xrightarrow[c_{11}]{} 12 \xrightarrow[c_7]{} 7 \xrightarrow[c_{12}]{} 1{,}4 \xrightarrow[c_1]{} 2 \xrightarrow[c_8]{} 9 \xrightarrow[c_3]{} 3 \xrightarrow[c_6]{} 6 \xrightarrow[c_{10}]{} 10 \xrightarrow[c_5]{} 5 \twoheadrightarrow c_2, c_4, c_9$$

Ideals for irreducible components[2] of $X_{\mathbf{par}}$

$$I_1^u = \langle u^{42} + u^{41} + \cdots + b + u,\ -u^{28} - 11u^{26} + \cdots + a - 1,\ u^{47} + 2u^{46} + \cdots - 2u - 1\rangle$$
$$I_2^u = \langle u^3 + b + u,\ u^2 + a + 1,\ u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1\rangle$$

* 2 irreducible components of $\dim_{\mathbb{C}} = 0$, with total 53 representations.

[1]The image of knot diagram is generated by the software "**Draw programme**" developed by Andrew Bartholomew(`http://www.layer8.co.uk/maths/draw/index.htm#Running-draw`), where we modified some parts for our purpose(`https://github.com/CATsTAILs/LinksPainter`).

[2]All coefficients of polynomials are rational numbers. But the coefficients are sometimes approximated in decimal forms when there is not enough margin.

I.

$$\boldsymbol{I_1^u = \langle u^{42}+u^{41}+\cdots+b+u,\ -u^{28}-11u^{26}+\cdots+a-1,\ u^{47}+2u^{46}+\cdots-2u-1\rangle}$$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$

$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$

$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$

$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$

$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$

$$a_4 = \begin{pmatrix} u^{28} + 11u^{26} + \cdots + 8u + 1 \\ -u^{42} - u^{41} + \cdots - 9u^2 - u \end{pmatrix}$$

$$a_2 = \begin{pmatrix} -u^{46} - u^{45} + \cdots - 11u^2 - 6u \\ -u^{46} - 2u^{45} + \cdots + 3u + 1 \end{pmatrix}$$

$$a_9 = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^7 - 3u^5 - 2u^3 + u \end{pmatrix}$$

$$a_3 = \begin{pmatrix} 2u^{46} + 2u^{45} + \cdots + 14u^2 + 7u \\ 2u^{46} + 4u^{45} + \cdots - 4u - 2 \end{pmatrix}$$

$$a_6 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$

$$a_{10} = \begin{pmatrix} -u^6 - 3u^4 - 2u^2 + 1 \\ -u^6 - 2u^4 - u^2 \end{pmatrix}$$

$$a_5 = \begin{pmatrix} -u^9 - 4u^7 - 5u^5 + 3u \\ -u^9 - 3u^7 - 3u^5 + u \end{pmatrix}$$

(ii) Obstruction class $= -1$

(iii) Cusp Shapes $= 4u^{46} + 8u^{45} + \cdots + 8u - 13$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2, c_4	$u^{47} - 7u^{46} + \cdots - 7u + 1$
c_3, c_9	$u^{47} - u^{46} + \cdots + 128u + 64$
c_5, c_6, c_8 c_{10}	$u^{47} - 2u^{46} + \cdots - 18u - 9$
c_7, c_{11}, c_{12}	$u^{47} + 2u^{46} + \cdots - 2u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$y^{47} - 51y^{46} + \cdots + 47y - 1$
c_3, c_9	$y^{47} + 39y^{46} + \cdots + 36864y - 4096$
c_5, c_6, c_8 c_{10}	$y^{47} - 60y^{46} + \cdots + 1494y - 81$
c_7, c_{11}, c_{12}	$y^{47} + 36y^{46} + \cdots + 22y - 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.931573 + 0.033964I$ $a = -3.62555 - 1.06085I$ $b = -4.04479 - 1.25290I$	$18.8163 + 7.6066I$	$-17.4102 - 3.4010I$
$u = -0.931573 - 0.033964I$ $a = -3.62555 + 1.06085I$ $b = -4.04479 + 1.25290I$	$18.8163 - 7.6066I$	$-17.4102 + 3.4010I$
$u = 0.925379$ $a = 4.48125$ $b = 5.06824$	-15.5609	-16.5480
$u = -0.921953 + 0.011274I$ $a = 1.352420 - 0.172739I$ $b = 1.42411 + 0.22950I$	$-13.30020 + 3.04123I$	$-15.7591 - 2.6303I$
$u = -0.921953 - 0.011274I$ $a = 1.352420 + 0.172739I$ $b = 1.42411 - 0.22950I$	$-13.30020 - 3.04123I$	$-15.7591 + 2.6303I$
$u = 0.350823 + 1.049320I$ $a = 1.24839 - 0.95940I$ $b = 1.86804 + 0.49348I$	$-8.18690 + 1.30928I$	$-14.5225 + 0.I$
$u = 0.350823 - 1.049320I$ $a = 1.24839 + 0.95940I$ $b = 1.86804 - 0.49348I$	$-8.18690 - 1.30928I$	$-14.5225 + 0.I$
$u = 0.885281$ $a = -1.61021$ $b = -1.68165$	-8.45625	-8.69640
$u = 0.044109 + 1.177400I$ $a = -0.897270 + 0.427390I$ $b = 0.26502 + 1.43818I$	$1.19605 - 0.94580I$	$-9.30810 + 0.I$
$u = 0.044109 - 1.177400I$ $a = -0.897270 - 0.427390I$ $b = 0.26502 - 1.43818I$	$1.19605 + 0.94580I$	$-9.30810 + 0.I$

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.262817 + 1.164060I$ $a = -0.677836 + 0.380418I$ $b = 0.236782 - 0.642439I$	$-0.606425 - 1.119520I$	$-12.48597 + 0.I$
$u = 0.262817 - 1.164060I$ $a = -0.677836 - 0.380418I$ $b = 0.236782 + 0.642439I$	$-0.606425 + 1.119520I$	$-12.48597 + 0.I$
$u = -0.173486 + 1.230470I$ $a = 0.394455 + 0.372411I$ $b = 0.781097 + 0.132649I$	$2.76219 + 2.33868I$	0
$u = -0.173486 - 1.230470I$ $a = 0.394455 - 0.372411I$ $b = 0.781097 - 0.132649I$	$2.76219 - 2.33868I$	0
$u = -0.283890 + 1.214980I$ $a = -0.93375 - 1.68089I$ $b = -2.46189 - 0.25027I$	$-2.16231 + 3.49023I$	0
$u = -0.283890 - 1.214980I$ $a = -0.93375 + 1.68089I$ $b = -2.46189 + 0.25027I$	$-2.16231 - 3.49023I$	0
$u = 0.729642 + 0.166193I$ $a = -2.35770 + 1.36778I$ $b = -1.47388 + 0.31386I$	$-10.80020 - 5.29604I$	$-17.2800 + 4.5994I$
$u = 0.729642 - 0.166193I$ $a = -2.35770 - 1.36778I$ $b = -1.47388 - 0.31386I$	$-10.80020 + 5.29604I$	$-17.2800 - 4.5994I$
$u = -0.057596 + 1.253360I$ $a = 0.339761 - 0.116633I$ $b = 0.339456 - 1.125610I$	$3.89474 + 1.72506I$	0
$u = -0.057596 - 1.253360I$ $a = 0.339761 + 0.116633I$ $b = 0.339456 + 1.125610I$	$3.89474 - 1.72506I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u = 0.271270 + 1.256580I$ $a = 0.044945 + 0.350451I$ $b = -0.929623 + 1.047440I$	$0.20223 - 5.63538I$	0
$u = 0.271270 - 1.256580I$ $a = 0.044945 - 0.350451I$ $b = -0.929623 - 1.047440I$	$0.20223 + 5.63538I$	0
$u = -0.681129$ $a = 3.55601$ $b = 1.84966$	-5.84226	-16.3910
$u = 0.663598 + 0.066636I$ $a = 0.818243 - 0.611101I$ $b = 0.281216 - 0.780752I$	$-3.85427 - 2.27055I$	$-16.0301 + 4.5719I$
$u = 0.663598 - 0.066636I$ $a = 0.818243 + 0.611101I$ $b = 0.281216 + 0.780752I$	$-3.85427 + 2.27055I$	$-16.0301 - 4.5719I$
$u = 0.418616 + 1.278440I$ $a = 0.422426 - 0.961243I$ $b = 1.59423 + 0.48650I$	$-4.48545 - 4.66586I$	0
$u = 0.418616 - 1.278440I$ $a = 0.422426 + 0.961243I$ $b = 1.59423 - 0.48650I$	$-4.48545 + 4.66586I$	0
$u = -0.098317 + 1.342180I$ $a = 0.247608 + 0.502928I$ $b = -1.198420 + 0.642791I$	$-1.25656 + 3.25255I$	0
$u = -0.098317 - 1.342180I$ $a = 0.247608 - 0.502928I$ $b = -1.198420 - 0.642791I$	$-1.25656 - 3.25255I$	0
$u = -0.467449 + 1.264530I$ $a = 1.55167 + 2.04635I$ $b = 3.15396 - 2.12723I$	$-16.8558 - 2.6238I$	0

Solutions to I_1^u	$\sqrt{-1}(\text{vol} + \sqrt{-1}CS)$	Cusp shape
$u = -0.467449 - 1.264530I$ $a = 1.55167 - 2.04635I$ $b = 3.15396 + 2.12723I$	$-16.8558 + 2.6238I$	0
$u = 0.290224 + 1.319350I$ $a = 0.22664 - 1.55655I$ $b = 1.55061 - 0.91105I$	$-6.15563 - 8.92874I$	0
$u = 0.290224 - 1.319350I$ $a = 0.22664 + 1.55655I$ $b = 1.55061 + 0.91105I$	$-6.15563 + 8.92874I$	0
$u = -0.450761 + 1.279910I$ $a = -0.262410 - 0.919173I$ $b = -0.848073 + 0.408862I$	$-9.36462 + 1.85590I$	0
$u = -0.450761 - 1.279910I$ $a = -0.262410 + 0.919173I$ $b = -0.848073 - 0.408862I$	$-9.36462 - 1.85590I$	0
$u = 0.449749 + 1.289880I$ $a = -1.11666 + 2.79890I$ $b = -4.69994 - 1.43155I$	$-11.55410 - 4.90637I$	0
$u = 0.449749 - 1.289880I$ $a = -1.11666 - 2.79890I$ $b = -4.69994 + 1.43155I$	$-11.55410 + 4.90637I$	0
$u = -0.430024 + 0.463380I$ $a = 0.073435 - 0.954770I$ $b = 0.627166 + 0.371706I$	$-6.80327 + 1.66591I$	$-14.4251 - 3.8260I$
$u = -0.430024 - 0.463380I$ $a = 0.073435 + 0.954770I$ $b = 0.627166 - 0.371706I$	$-6.80327 - 1.66591I$	$-14.4251 + 3.8260I$
$u = -0.443644 + 1.297270I$ $a = -0.442064 - 0.748189I$ $b = -1.82872 + 0.23677I$	$-9.23009 + 7.91648I$	0

Solutions to I_1^u	$\sqrt{-1}(\mathrm{vol}+\sqrt{-1}CS)$	Cusp shape
$u=-0.443644-1.297270I$ $a=-0.442064+0.748189I$ $b=-1.82872-0.23677I$	$-9.23009-7.91648I$	0
$u=-0.443422+1.315870I$ $a=\quad 0.30539+2.51704I$ $b=\quad 4.35921+0.13601I$	$-16.4532+12.5153I$	0
$u=-0.443422-1.315870I$ $a=\quad 0.30539-2.51704I$ $b=\quad 4.35921-0.13601I$	$-16.4532-12.5153I$	0
$u=-0.475692$ $a=-1.09705$ $b=-0.304127$	-0.943106	-10.1730
$u=-0.220025+0.246765I$ $a=-0.83102+1.27964I$ $b=-0.099600+0.370710I$	$-0.433930+0.816857I$	$-9.44363-8.26201I$
$u=-0.220025-0.246765I$ $a=-0.83102-1.27964I$ $b=-0.099600-0.370710I$	$-0.433930-0.816857I$	$-9.44363+8.26201I$
$u=\quad 0.228742$ $a=\quad 2.90776$ $b=-0.724057$	-2.00058	0.109480

II. $\boldsymbol{I_2^u = \langle u^3 + b + u,\ u^2 + a + 1,\ u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1\rangle}$

(i) Arc colorings

$$a_8 = \begin{pmatrix} 0 \\ u \end{pmatrix}$$
$$a_{11} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}$$
$$a_{12} = \begin{pmatrix} 1 \\ u^2 \end{pmatrix}$$
$$a_7 = \begin{pmatrix} u \\ u^3 + u \end{pmatrix}$$
$$a_1 = \begin{pmatrix} u^2 + 1 \\ u^4 + 2u^2 \end{pmatrix}$$
$$a_4 = \begin{pmatrix} -u^2 - 1 \\ -u^3 - u \end{pmatrix}$$
$$a_2 = \begin{pmatrix} 0 \\ u^4 - u^3 + 2u^2 - u \end{pmatrix}$$
$$a_9 = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^5 + u^4 - 2u^3 + u^2 - u - 1 \end{pmatrix}$$
$$a_3 = \begin{pmatrix} -u^2 - 1 \\ -u^3 - u \end{pmatrix}$$
$$a_6 = \begin{pmatrix} u^3 + 2u \\ u^3 + u \end{pmatrix}$$
$$a_{10} = \begin{pmatrix} -u^5 - 2u^3 - u \\ -u^5 + u^4 - 2u^3 + u^2 - u - 1 \end{pmatrix}$$
$$a_5 = \begin{pmatrix} -u^2 - 1 \\ -u^4 - 2u^2 \end{pmatrix}$$

(ii) Obstruction class $= 1$

(iii) Cusp Shapes $= -5u^4 + 6u^3 - 11u^2 + 6u - 17$

(iv) u-Polynomials at the component

Crossings	u-Polynomials at each crossing
c_1, c_2	$(u-1)^6$
c_3, c_9	u^6
c_4	$(u+1)^6$
c_5, c_6, c_8	$u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1$
c_7	$u^6 + u^5 + 3u^4 + 2u^3 + 2u^2 + u - 1$
c_{10}	$u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1$
c_{11}, c_{12}	$u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1$

(v) Riley Polynomials at the component

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$(y-1)^6$
c_3, c_9	y^6
c_5, c_6, c_8 c_{10}	$y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1$
c_7, c_{11}, c_{12}	$y^6 + 5y^5 + 9y^4 + 4y^3 - 6y^2 - 5y + 1$

(vi) Complex Volumes and Cusp Shapes

Solutions to I_2^u	$\sqrt{-1}(\mathrm{vol} + \sqrt{-1}CS)$	Cusp shape
$u = 0.873214$ $a = -1.76250$ $b = -1.53904$	-9.30502	-19.0600
$u = -0.138835 + 1.234450I$ $a = 0.504580 + 0.342767I$ $b = -0.493180 + 0.575288I$	$1.31531 + 1.97241I$	$-8.22189 - 4.83849I$
$u = -0.138835 - 1.234450I$ $a = 0.504580 - 0.342767I$ $b = -0.493180 - 0.575288I$	$1.31531 - 1.97241I$	$-8.22189 + 4.83849I$
$u = 0.408802 + 1.276380I$ $a = 0.462019 - 1.043570I$ $b = 1.52087 + 0.16310I$	$-5.34051 - 4.59213I$	$-15.2853 + 2.7994I$
$u = 0.408802 - 1.276380I$ $a = 0.462019 + 1.043570I$ $b = 1.52087 - 0.16310I$	$-5.34051 + 4.59213I$	$-15.2853 - 2.7994I$
$u = -0.413150$ $a = -1.17069$ $b = 0.483672$	-2.38379	-21.9250

III. u-Polynomials

Crossings	u-Polynomials at each crossing
c_1, c_2	$((u-1)^6)(u^{47} - 7u^{46} + \cdots - 7u + 1)$
c_3, c_9	$u^6(u^{47} - u^{46} + \cdots + 128u + 64)$
c_4	$((u+1)^6)(u^{47} - 7u^{46} + \cdots - 7u + 1)$
c_5, c_6, c_8	$(u^6 - u^5 - 3u^4 + 2u^3 + 2u^2 + u - 1)(u^{47} - 2u^{46} + \cdots - 18u - 9)$
c_7	$(u^6 + u^5 + 3u^4 + 2u^3 + 2u^2 + u - 1)(u^{47} + 2u^{46} + \cdots - 2u - 1)$
c_{10}	$(u^6 + u^5 - 3u^4 - 2u^3 + 2u^2 - u - 1)(u^{47} - 2u^{46} + \cdots - 18u - 9)$
c_{11}, c_{12}	$(u^6 - u^5 + 3u^4 - 2u^3 + 2u^2 - u - 1)(u^{47} + 2u^{46} + \cdots - 2u - 1)$

IV. Riley Polynomials

Crossings	Riley Polynomials at each crossing
c_1, c_2, c_4	$((y-1)^6)(y^{47} - 51y^{46} + \cdots + 47y - 1)$
c_3, c_9	$y^6(y^{47} + 39y^{46} + \cdots + 36864y - 4096)$
c_5, c_6, c_8 c_{10}	$(y^6 - 7y^5 + 17y^4 - 16y^3 + 6y^2 - 5y + 1)$ $\cdot (y^{47} - 60y^{46} + \cdots + 1494y - 81)$
c_7, c_{11}, c_{12}	$(y^6 + 5y^5 + \cdots - 5y + 1)(y^{47} + 36y^{46} + \cdots + 22y - 1)$